

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

INTERNATIONAL APPLICATION NO.  
**PCT/EP99/04914**INTERNATIONAL FILING DATE  
**13 July 1999**

ATTORNEY'S DOCKET NUMBER

**20981.010**

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.5)

**09/743938**

PRIORITY DATE CLAIMED

**17 July 1998**

## TITLE OF INVENTION

## DEVICE FOR SIZING A YARN SHEET

## APPLICANT(S) FOR DO/EO/US

Ralf Fuchs, et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1.  This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2.  This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3.  This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4.  A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5.  A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a.  is transmitted herewith (required only if not transmitted by the International Bureau).
  - b.  has been transmitted by the International Bureau.
  - c.  is not required, as the application was filed in the United States Receiving Office (RO/US).
6.  A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7.  A copy of the International Search Report (PCT/ISA/210).
8.  Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a.  are transmitted herewith (required only if not transmitted by the International Bureau).
  - b.  have been transmitted by the International Bureau.
  - c.  have not been made; however, the time limit for making such amendments has NOT expired.
  - d.  have not been made and will not be made.
9.  A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10.  An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11.  A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12.  A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

## Items 13 to 20 below concern document(s) or information included:

13.  An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14.  An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15.  A **FIRST** preliminary amendment.
16.  A **SECOND** or **SUBSEQUENT** preliminary amendment.
17.  A substitute specification.
18.  A change of power of attorney and/or address letter.
19.  Certificate of Mailing by Express Mail
20.  Other items or information:

Copy of PCT Request

Copy of International Publication of Application - WO 00/04219

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.5)

09/743938

INTERNATIONAL APPLICATION NO.

PCT/EP99/04914

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21. The following fees are submitted:

**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5) :**

		<b>CALCULATIONS PTO USE ONLY</b>	
<input type="checkbox"/>	Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO and International Search Report not prepared by the EPO or JPO .....	\$1,000.00	
<input checked="" type="checkbox"/>	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO .....	\$860.00	
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<input type="checkbox"/>	International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) .....	\$690.00	
<input type="checkbox"/>	International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) .....	\$100.00	

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"Device for Sizing a Yarn Sheet"

## Specification:

The invention relates to a device for sizing a yarn sheet being moved in a conveying direction, having at least one sizing compartment for contacting the yarn of the sheet with sizing liquor, wherein a draw-in unit is connected upstream of the sizing compartment, and a squeezer for the sizing is connected downstream thereof, with means for pre-wetting the yarn in the sheet with a liquor which is at least diluted in respect to the sizing liquor, in particular preferably with hot water, prior to its contact with the sizing liquor, and with a wetting agent squeezer, placed between the pre-wetting means and the sizing compartment.

10        A device of this kind is described in DE 42 34 279 A1. In order to be able to conduct the yarn sheet, which consists of a plurality of parallel guided individual threads, correctly through the compartment with the liquid wetting agent and through the sizing compartment, in particular through the squeezers, a linear tension is exerted on the yarn sheet. To this end a draw-in unit is already placed upstream of the first wetting compartment, which opposes a certain braking force to the pulling force exerted by the squeezers in such a way, that the yarn sheet is tensed in the individual compartments all over in the linear direction of the individual yarns. The known device requires a separate wetting compartment, upstream of which the draw-in unit and downstream of which a wetting agent squeezer is placed. This entails a corresponding production outlay. An installation of the type described has a total width - measured in the axial direction of the squeezers - on an order of magnitude of 3 m. Therefore the center area of the yarn sheet is difficult to reach from the side of the machine. Since two or more units follow each other in the known device, the portions in the center of the machine can only be reached with difficulty from the inlet or outlet of the machine, even if the yarn sheet is fed from above or

15        below.

20

25

The object of the invention is based on realizing a sizing device with a pre-wetting compartment connected upstream thereof in a compact manner in respect to easy accessibility, while simultaneously reducing the production outlay.

The attainment of the invention in connection with the device recited at the outset

5 consists in that the draw-in unit is simultaneously embodied multi-functionally as the pre-moistening means and as the wetting agent squeezer. Some improvements and further embodiments of the invention will be described in what follows and in the independent claims.

In accordance with the invention, the pre-wetting means, including the associated

10 squeezer, are integrated into the draw-in unit. A draw-in unit, such as disclosed in above mentioned DE 42 34 279 A1, for example, has three rollers. In accordance with the invention, these three rollers not only take on the task of a draw-in unit, but also that of a pre-wetting unit, including the associated squeezer. The draw-in unit therefore has a multifunction in accordance with the invention, i.e. it is used (as is customary) to let the respective yarn sheet, 15 which had, for example, been drawn out of the unwinding creel of warping rollers, enter the sizing device at a predetermined speed. In accordance with the invention the further task is added, namely that of pre-wetting the yarn sheet with water or the like prior to entering the actual sizing bath, and to squeeze this pre-wetted yarn sheet in such a way that as little as possible pre-wetting agent gets into the sizing compartment; but the individual yarn 20 remains moist.

The described multi-function of the draw-in unit surprisingly also makes a compact structure possible at the same time, because the units, namely the draw-in unit, wetting trough and wetting agent squeezer, which up to now followed each other in the yarn conveying direction, are combined in a single unit with double- or multi-functions of their 25 individual parts. Since in accordance with the invention the draw-in unit comprises the pre-wetting means and the associated wetting agent squeezer, no additional space is required

for the pre-wetting compartment. The draw-in unit, combined in accordance with the invention, can therefore be placed in the immediate spatial vicinity upstream of the sizing compartment. This results in an extremely compact construction, a so-called modular structure, of a sizing device with a pre-wetting compartment. The yarn sheet can be fed 5 from below to the draw-in unit combined in accordance with the invention, so that the center area of the device is also accessible to a person standing in the center above the yarn inlet.

Generally, hot water at a temperature at an order of magnitude of 85°C is used for pre-wetting. The yarn sheet should be squeezed and conducted into the sizing compartment 10 at approximately this temperature. With the modular structure in accordance with the invention this is particularly easily possible, because the yarn sheet cools only slightly over the short distance of an order of magnitude of 1 m, between leaving the combined draw-in unit and running up on the first roller of the sizing compartment. A further reduction of the heat loss can be achieved if this area between the combined draw-in unit and the inlet to the 15 sizing compartment is protected against heat loss by a cover or the like.

In further accordance with the invention it is possible to associate the three rollers of the draw-in unit with each other and to press them against each other in pairs in such a way that a nip, open toward the top, is created between the first two rollers in the conveying direction of the yarn sheet, and the gap between the second and third rollers in the 20 conveying direction is usable as a wetting agent squeezer. At least one of the rollers, preferably the second roller, moreover can dip into wetting fluid in a pre-wetting trough. The yarn sheet is preferably conducted over the top of the (horizontal) first roller of the draw-in unit through the nip between the first and second rollers. Preferably the nip is kept 25 full of wetting agent. Thus the yarn sheet runs in an orderly fashion on the surface into the wetting fluid dammed up in the nip. At the bottom of the nip, the yarn sheet runs through a (first) squeezing gap between the first and second rollers along the surface of the second

roller, preferably through the wetting agent trough, and further on the surface of the second roller into the (second) squeezing gap, which corresponds to the wetting agent squeezer, between the second and the third rollers. There, the yarn sheet is squeezed sufficiently so that the individual yarn remains wetted, but transports the least possible amount of wetting agent into the sizing compartment.

Thus, a draw-in unit combined in accordance with the invention comprises a pre-wetting device with two wetting and two squeezing stations. Only a total of three rollers are required for this, i.e. no more rollers than in any draw-in unit. Basically only means for charging the yarn sheet with wetting agent - i.e. in particular the fluid supply to the nip of the first and second rollers - are required in addition to the customary draw-in unit.

The compactness of the draw-in unit combined in accordance with the invention in connection with the downstream-connected sizing compartment is further improved if the second and third rollers of the draw-in unit are arranged essentially vertically above each other (i.e. with roller axes located essentially vertically on top of each other). After running off the third roller, the yarn sheet can be conducted over a minimally short distance to the surface of the first roller in the sizing compartment.

Some details of the invention will be explained by means of the schematic representation of an exemplary embodiment.

The device in accordance with the invention comprises a combined draw-in unit, identified as a whole by 1, and a sizing compartment, identified as a whole by 2. A yarn sheet 3, for example a yarn chain, reaches the draw-in unit 1 via a reversing roller 4 from below in the conveying direction 5. The yarn sheet 3 runs up on the top of the first roller 6 of the draw-in unit 1, and from there reaches a nip 9, formed between the first and the second rollers 6, 7 above a first squeezing gap 8, or into a first wetting agent supply reservoir 10 dammed up in the nip 9. The level 11 of the wetting agent supply reservoir 10 can be held constant with the aid of a pump 12. The pump 12 can convey fluid from a wetting agent

trough 13, into which the second roller 7 dips. The axes of the rollers are horizontally seated in the customary manner.

The yarn sheet 3 is moistened in the first wetting agent supply reservoir 10, and is subsequently squeezed in the first squeeze gap 8, it continues on the surface of the second 5 roller 7 through the second wetting agent supply 14 contained in the wetting agent trough 13.

The yarn sheet 3 dipped into the wetting agent trough 13 is further conducted over the surface of the second roller 7 to the wetting agent squeezing gap 16 (wetting agent squeezer) formed between the second roller 7 and the third roller 15 of the draw-in unit 1.

10 There, squeezing of the previously twice wetted yarn sheet 3 down to an amount customary in wetting units takes place. In an exemplary embodiment the squeezing force in the first squeezing gap 8 is on an order of magnitude of 10 kN, in the second squeezing gap 16 approximately 100 kN. The yarn sheet 3, which has been dewatered in the second squeezing gap 16 and is preferably still warm because of having been dipped into the hot wetting 15 agent, preferably moves on as short as possible a free distance 17 from the surface of the third roller 15 to the surface of the first roller 18 of the sizing compartment 2. Should there be a danger of too great cooling of the yarn sheet 3 in spite of the only short distance 17, a thermally insulating cover 19 can be provided over the distance.

The sizing compartment 2, which is connected downstream of the combined draw-in 20 unit 1 of the invention, can be embodied in the customary manner. In the exemplary embodiment the yarn sheet 3 first passes through a first sizing agent reservoir 20, which is dammed up in the nip 21 above a first squeezing gap 22 between the first roller 18 and the second roller 23. On the surface of the second roller 23, the yarn sheet 3 then passes through a second sizing agent supply 25 dammed up in a trough 24, and finally over the surface of 25 the second roller through a second squeezing gap 27 (sizing squeezer) provided between the second roller 23 and the third roller 26 of the sizing compartment 2. The third roller 26 can

also dip into the second sizing agent supply 25. The squeezing force in the squeezing gap 22 between the first roller 18 and the second roller 23 can be of an order of magnitude of 10 kN, the squeezing force between the second roller 23 and the third roller 26 in the gap 27 can be of an order of magnitude of 50 nM.

5 In the exemplary embodiment, the squeezing forces of the rollers can be set with the aid of pressure means 28 and 29, partially schematically represented, for example compressed air cylinders. In both cases the second roller 7, or 23, can be driven, while the other two rollers are idling along.

A device for sizing a yarn sheet is described, having at least one sizing compartment  
10 for contacting the yarn with sizing liquor, upstream of which a draw-in unit is connected, and downstream of which a sizing agent squeezer is connected. In order to achieve pre-wetting of the yarn sheet with water or the like prior to its entering the sizing liquor and that it can be squeezed following pre-wetting, but prior to sizing, without additional units being required in principle, the draw-in unit is multi-functionally designed simultaneously as a  
15 pre-wetting device and as a wetting agent squeezer.

#### List of Reference Numerals

1	=	Draw-in unit	
2	=	Sizing compartment	
3	=	Yarn sheet	
20	4	=	Reversing roller
	5	=	Conveying direction
	6	=	First roller (1)
	7	=	Second roller (1)
	8	=	First squeezing gap (1)
25	9	=	Nip (8)
	10	=	First wetting agent supply reservoir (1)

11 = Level (10 )  
12 = Pump  
13 = Wetting agent trough  
14 = Second wetting agent supply (1)  
5 15 = Third roller (81)  
16 = Wetting agent squeezing gap  
17 = Free distance  
18 = First roller (2)  
19 = Cover (17)  
10 20 = First sizing agent reservoir (2)  
21 = Nip  
22 = First squeezing gap (2)  
23 = Second squeezing roller (2)  
24 = Trough  
15 25 = Second sizing agent supply (2)  
26 = Third roller (2)  
27 = Second squeezing gap (2)  
28 = Compressed air cylinder (1)  
29 = Compressed air cylinder (2)

**Claims:**

1. A device for sizing a yarn sheet (3) being moved in a conveying direction (5), having at least one sizing compartment (2) for contacting the yarn of the sheet with sizing liquor (25), wherein a draw-in unit (1), which preferably comprises three rollers (6, 7, 15), is connected upstream of the sizing compartment (2), and a squeezer (27) for the sizing is connected downstream thereof, with means for pre-wetting the yarn in the sheet with a liquor which is at least diluted in respect to the sizing liquor, in particular with water, prior to its contact with the sizing liquor (25), and with a wetting agent squeezer (16), placed between the pre-wetting means and the sizing compartment (1),

characterized in that

10 the draw-in unit (1) is simultaneously embodied multifunctionally as the pre-moistening means (10, 14) and as the wetting agent squeezer (7, 15, 16).

2. The device in accordance with claim 1,

characterized in that

a draw-in unit (1) consisting of three rollers (6, 7, 15)

5 dams up a first wetting agent supply (10) in a nip (9) above a first squeezing gap (8) between its first and second rollers (6, 7) in the conveying direction (5) of the yarn sheet (3), and dips with at least one of its rollers, in particular the second roller (7), into a second wetting agent supply (14), and that the path of the yarn sheet (3) after the first wetting agent supply (10) leads through a first squeezing gap (8), and then along the surface of the second roller (7) 10 through the second wetting agent supply (14) through a second squeezing gap (16), the wetting agent squeezer.

3. The device in accordance with claim 1 or 2,

characterized in that

the second roller (7) and the third roller (15) of the draw-in unit (1) are arranged with  
5 their axes essentially vertically above each other.

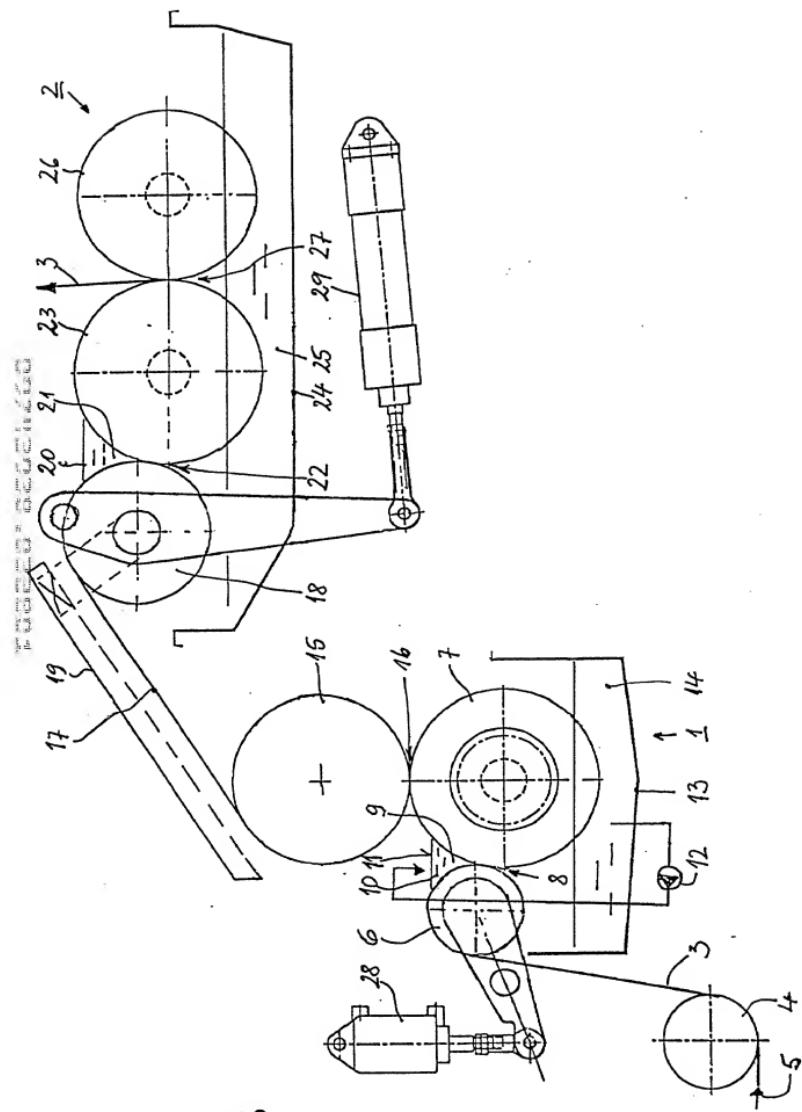
4. The device in accordance with at least one of claims 1 to 3,  
characterized in that  
the yarn sheet (3) is conducted over a free distance (17) from the surface of the third  
5 roller (15) of the draw-in unit (1) to the surface of the first roller (18) of the sizing  
compartment (2), and the length of the free distance (17) between the departure of the yarn  
sheet (3) from the third roller (15) of the draw-in unit (1) and the first roller (18) of the sizing  
compartment (2) is minimized because of its compact structure.

5. The device in accordance with claim 4,  
characterized in that  
the free distance (17) is protected against heat loss by means of a cover (19).

**Abstract**

A device for sizing a yarn sheet is described, having at least one sizing compartment for contacting the yarn with sizing liquor, upstream of which a draw-in unit is connected, and downstream of which a sizing agent squeezer is connected. In order to 5 achieve pre-wetting of the yarn sheet with water or the like prior to its entering the sizing liquor and that it can be squeezed following pre-wetting, but prior to sizing, without additional units being required in principle, the draw-in unit is multi-functionally designed simultaneously as a pre-wetting device and as a wetting agent squeezer.

VENTURE INNOVATION GROUP



09/743938

# Declaration and Power of Attorney for Patent Application

## Erklärung für Patentanmeldungen mit Vollmacht

### German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

daß mein Wohnsitz, meine Postanschrift und meine Staatsangehörigkeit den im nachstehenden nach meinem Namen aufgeführten Angaben entsprechen, daß ich nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent für die Erfindung mit folgendem Titel beantragt wird:

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

#### DEVICE FOR SIZING A YARN SHEET

Deren Beschreibung hier beigefügt ist, es sei denn (in diesem Falle Zutreffendes bitte ankreuzen), diese Erfindung

wurde angemeldet am \_\_\_\_\_  
 unter der US-Anmeldenummer oder unter der  
 Internationalen Anmeldenummer im Rahmen des Vertrags  
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 Patentwesens (PCT)  
 und am \_\_\_\_\_  
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Ich bestätige hiermit, daß ich den Inhalt der oben angegebenen Patentanmeldung, einschließlich der Ansprüche, die eventuell durch einen oben erwähnten Zusatzantrag abgeändert wurde, durchgesehen und verstanden habe.

the specification of which is attached hereto unless the following box is checked:

was filed on \_\_\_\_\_  
 as United States Application Number or PCT International  
 Application Number \_\_\_\_\_ was amended on \_\_\_\_\_  
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I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Titel 37, Code of Federal Regulations, § 1.56 von Belang sind.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

## German Language Declaration

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäß Title 35, US-Code, § 119 (a)-(d), bzw. § 365(b) aller unten aufgeführten Auslandsanmeldungen für Patente oder Erfinderkundens, oder § 365(a) aller PCT internationalen Anmeldungen, welche wenigstens ein Land ausser den Vereinigten Staaten von Amerika benennen, und habe nachstehend durch ankreuzen sämtliche Auslandsanmeldungen für Patente bzw. Erfinderkundens oder PCT internationale Anmeldungen angegeben, deren Anmeldetag dem der Anmeldung, für welche Priorität beansprucht wird, vorangeht.

Prior Foreign Applications  
(Frühere ausländische Anmeldungen)

198 32 163.5 –	Germany
(Number)	(Country)
(Nummer)	(Land)

(Number)	(Country)
(Nummer)	(Land)

Ich beanspruche hiermit Prioritätsvorteile unter Title 35, US-Code, § 119(e) aller US-Hilfsanmeldungen wie unten aufgezählt.

(Application No.)	(Filing Date)
(Aktenzeichen)	(Anmeldetag)

(Application No.)	(Filing Date)
(Aktenzeichen)	(Anmeldetag)

Ich beanspruche hiermit die mir unter Title 35, US-Code, § 120 zustehenden Vorteile aller unten aufgeführten US-Patentanmeldungen bzw. § 365(c) aller PCT internationalen Anmeldungen, welche die Vereinigten Staaten von Amerika benennen, und erkenne, insofern der Gegenstand eines jeden früheren Anspruchs dieser Patentanmeldung nicht in einer US-Patentanmeldung, bzw. PCT internationalen Anmeldung in einer gemäß dem ersten Absatz von Title 35, US-Code, § 112 vorgeschriebenen Art und Weise offenbart wurde, meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Title 37, Code of Federal Regulations, § 1.56 von Belang sind und die im Zeitraum zwischen dem Anmeldetag der früheren Patentanmeldung und dem nationalen oder im Rahmen des Vertrags über die Zusammenarbeit auf dem Gebiet des Patentwesens (PCT) gültigen internationalen Anmeldetags bekannt geworden sind.

(Application No.)	(Filing Date)
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(Aktenzeichen)	(Anmeldetag)

Ich erkläre hiermit, daß alle in der vorliegenden Erklärung von mir gemachten Angaben nach bestem Wissen und Gewissen der Wahrheit entsprechen, und ferner daß ich diese eidesstattliche Erklärung in Kenntnis dessen ablege, daß wissentlich und vorsätzlich falsche Angaben oder dergleichen gemäß § 1001, Title 18 des US-Code strafbar sind und mit Geldstrafe und/oder Gefängnis bestraft werden können und daß derartige wissentlich und vorsätzlich falsche Angaben die Rechtswirksamkeit der vorliegenden Patentanmeldung oder eines aufgrund derselben erteilten Patentes gefährden können.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed  
Priorität nicht beansprucht

17 July 1998  
(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s), or § 365(c) of any PCT Intentional application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Status) (patented, pending, abandoned)  
(Status) (patentiert, schwiegend, aufgegeben)

(Status) (patented, pending, abandoned)  
(Status) (patentiert, schwiegend, aufgegeben)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

## German Language Declaration

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

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Unterschrift des Erfinders	Datum	Inventor's signature <u>Ralf Fuchs</u> Date <u>14.01.2001</u>
Wohnsitz		Residence <u>Stolberg</u> , Germany <u>DEX</u>
Staatsangehörigkeit		Citizenship German ✓
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Vor- und Zuname des zweiten Miterfinders (falls zutreffend)  <u>2-00</u>		Full name of second joint inventor, if any <u>Hans Gerhard WROBLOWSKI</u>
Unterschrift des zweiten Erfinders	Datum	Second Inventor's signature <u>Hans Gerhard Wroblowski</u> Date <u>18.01.2001</u>
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Staatsangehörigkeit		Citizenship German ✓
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(Im Falle dritter und weiterer Miterfinder sind die entsprechenden Informationen und Unterschriften hinzuzufügen.)

(Supply similar information and signature for third and subsequent joint inventors.)

Vor- und Zuname des einzigen oder ersten Erfinders <i>3-00</i>	Full name of third joint inventor, if any <u>Gerhard VOSWINCKEL</u>		
Unterschrift des Erfinders	Datum	Inventor's signature / <i>Wunderlich</i> Date <i>4.01.2001</i>	
Wohnsitz	Residence <u>Aachen, Germany</u> <i>DEX</i>		
Staatsangehörigkeit	Citizenship <u>Germany</u> ✓		
Postanschrift	Post Office Address Elsa-Brädström-Straße 30, D-52070 Aachen, Germany		
Vor- und Zuname des zweiten Miterfinders (falls zutreffend)	Full name of fourth joint inventor, if any		
Unterschrift des zweiten Erfinders	Datum	Second Inventor's signature	Date
Wohnsitz	Residence		
Staatsangehörigkeit	Citizenship		
Postanschrift	Post Office Address		

(Im Falle dritter und weiterer Miterfinder sind die entsprechenden Informationen und Unterschriften hinzuzufügen.)

(Supply similar information and signature for third and subsequent joint inventors.)